



## Extension of the known geographic distribution of *Diplomys labilis* (Mammalia: Rodentia: Echimyidae): first record for Costa Rica

**José D. Ramírez-Fernández<sup>1,2\*</sup>, Jim Córdoba-Alfaro<sup>3</sup>, Diego Salas-Solano<sup>1,2</sup>, Francisco J. Durán A.<sup>4</sup> and Bernal Rodríguez-Herrera<sup>1,2</sup>**

<sup>1</sup> Escuela de Biología, Universidad de Costa Rica, 2060 San José, Costa Rica

<sup>2</sup> Asociación Theria para la Conservación e Investigación, Desamparados, San José, Costa Rica

<sup>3</sup> Department of Research, La Leona Eco-lodge, Península de Osa, Puntarenas, Costa Rica

<sup>4</sup> Departamento de Historia Natural, Museo Nacional de Costa Rica, 749-1000 San José, Costa Rica

\* Corresponding author. E-mail: [josed-rf@hotmail.com](mailto:josed-rf@hotmail.com)

**Abstract:** The Rufous Tree Rat, *Diplomys labilis*, is known to range geographically from Central Panamá to Colombia and probably Ecuador. It occurs in a variety of habitat types where it moves by the branches in the high canopy at night. We report the Rufous Tree Rat for Costa Rica, ranging outside its geographical distribution about 490 km west from its type locality.

**Key words:** Rufous Tree Rat; Osa Peninsula; range extension; Premontane Wet Forest; arboreal rat; first record; Costa Rica mammals

The genus *Diplomys* Thomas, 1916 consists of two species of arboreal soft-furred spiny-rats, after the recognition of *D. rufodorsalis* in its own monotypic genus, *Santamartamys* (Emmons 2005). The Rufous Tree Rat, *Diplomys labilis* (Bangs, 1901), is known to range from the Canal Zone of Panama, including San Miguel (type locality) and Barro Colorado Islands, east to western Colombia (although there are no specimens from this locality) and probably northern Ecuador (Carleton and Musser 2005). It occurs from sea level to elevations up to 1,500 m (Reid 2009).

The population status of the Rufous Tree Rat is largely unknown although it seems to be common in some areas including Central Panama and Barro Colorado Island (Tesh 1970; Emmons and Feer 1997; Nowak 1999). In view of its wide distribution in Panama, and its occurrence in a considerable number of protected areas, it has been classified as Least Concern in the IUCN Red List (Delgado et al. 2008).

The Rufous Tree Rat occurs in deciduous, evergreen and second growth forest, plantations and mangroves (Nowak 1999; Reid 2009). It is strictly nocturnal and

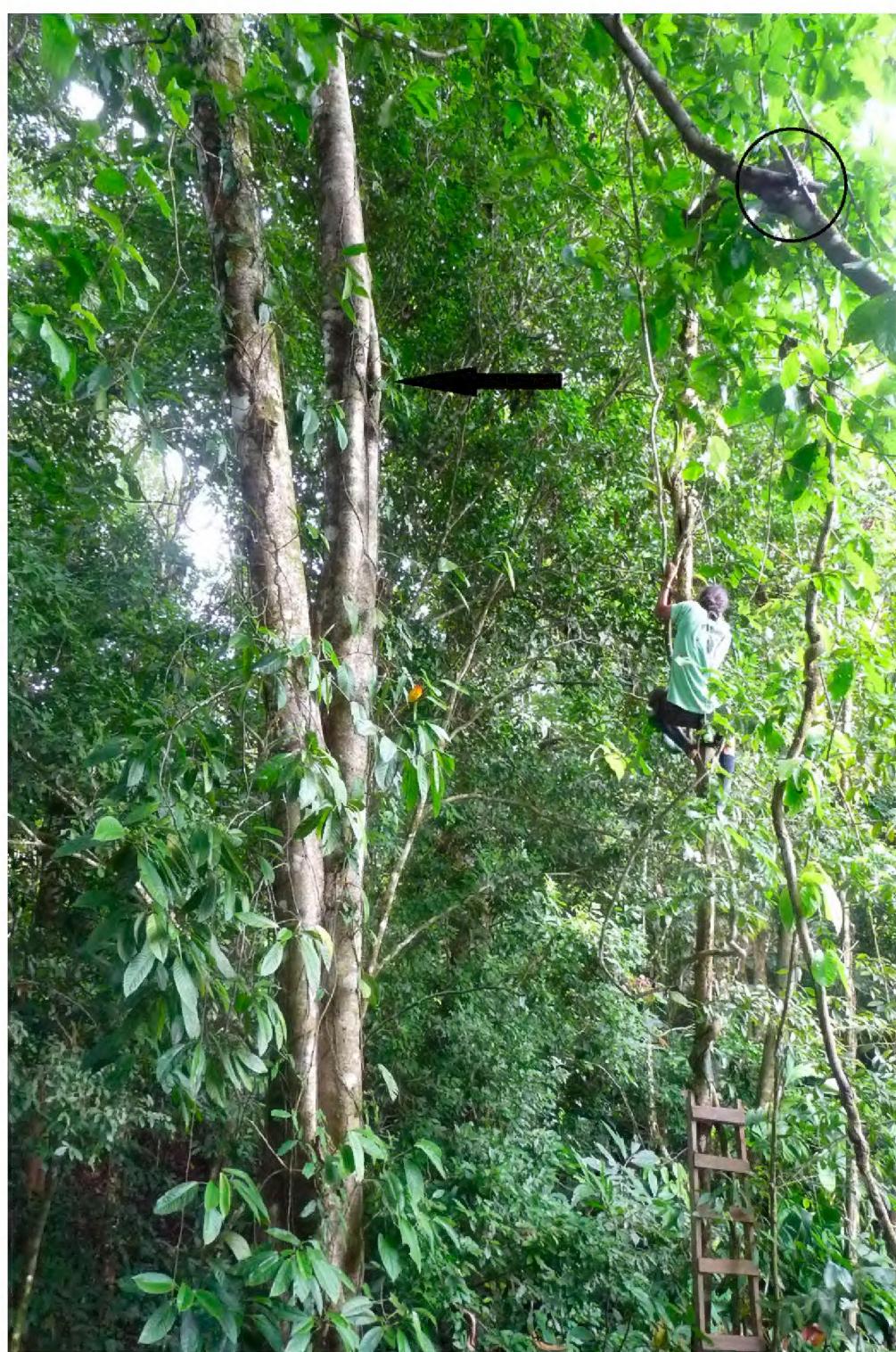
arboreal and has never been trapped on the ground. During the day it can be found sleeping in tree holes above the ground where it may rest motionless for long periods (Reid 2009). According to Tesh (1970), it can be trapped in tree holes used as burrows or in trees near streams.

Here we report a new location for the Rufous Tree Rat, ranging outside its known geographical distribution. We add as well a new species for the list of mammals of Costa Rica.

During a field trip on 15–17 May 2015 to southern Costa Rica, at La Tarde within La Palma, Osa Peninsula, Puntarenas (08°34'47" N, 083°29'21" W; 150 m elevation) we observed a single individual of *Diplomys labilis*. The animal was found by one of the authors (JCA) in a hole within a tree of *Apeiba tibourbou* (Malvaceae), about 10 m high in a disturbed primary forest crossed by La Tarde Creek.

The forest structure comprises a closed canopy about 30–40 m high and fits the description of the Premontane Wet Forest life zone according to Holdridge (1967). One of the authors climbed into a nearby tree and photographed the animal using a Panasonic Lumix DMC-FZ28 camera, about 4 m distance from the rat. We also set a camera trap Bushnell Model 119476 on a branch close to the hole where the rat was observed (Figure 1). The camera was activated for about 39 straight hours. However, the camera did not function properly during the night and we were unable to obtain a photo of the rat using the camera trap.

On 15 and 17 May the weather was clear and sunny and the rat was observed sitting motionless in the bottom of a shallow hole (Figure 2). On the first day the rat was seen in this position for at least 3.5 hours, in accordance



**Figure 1.** One of the authors (DSS) taking pictures of the Rufous Tree Rat *Diplomys labilis* in the Premontane Wet Forest at La Tarde, La Palma de Osa, Costa Rica, with an arrow indicating the rat within the hole and a circle showing the camera trap location. Photo by JDRF.

with behavior reported by Reid (2009) for the Rufous Tree Rat. On 16 May the weather was rainy and cloudy and the rat was not seen all day.

The rat species was identified, following Mendez (1993) and Reid (2009), on the basis of morphological traits. It differs from other sympatric arboreal rats or mice as it follows: very large size, tail shorter or as long as the head-body length, short snout, ears short and broad with a characteristic sinuous edge, body and head differ in color, and the diagnostic white facial patches at the base of its whiskers, above each eye, and behind the ears (Figures 3 and 4).

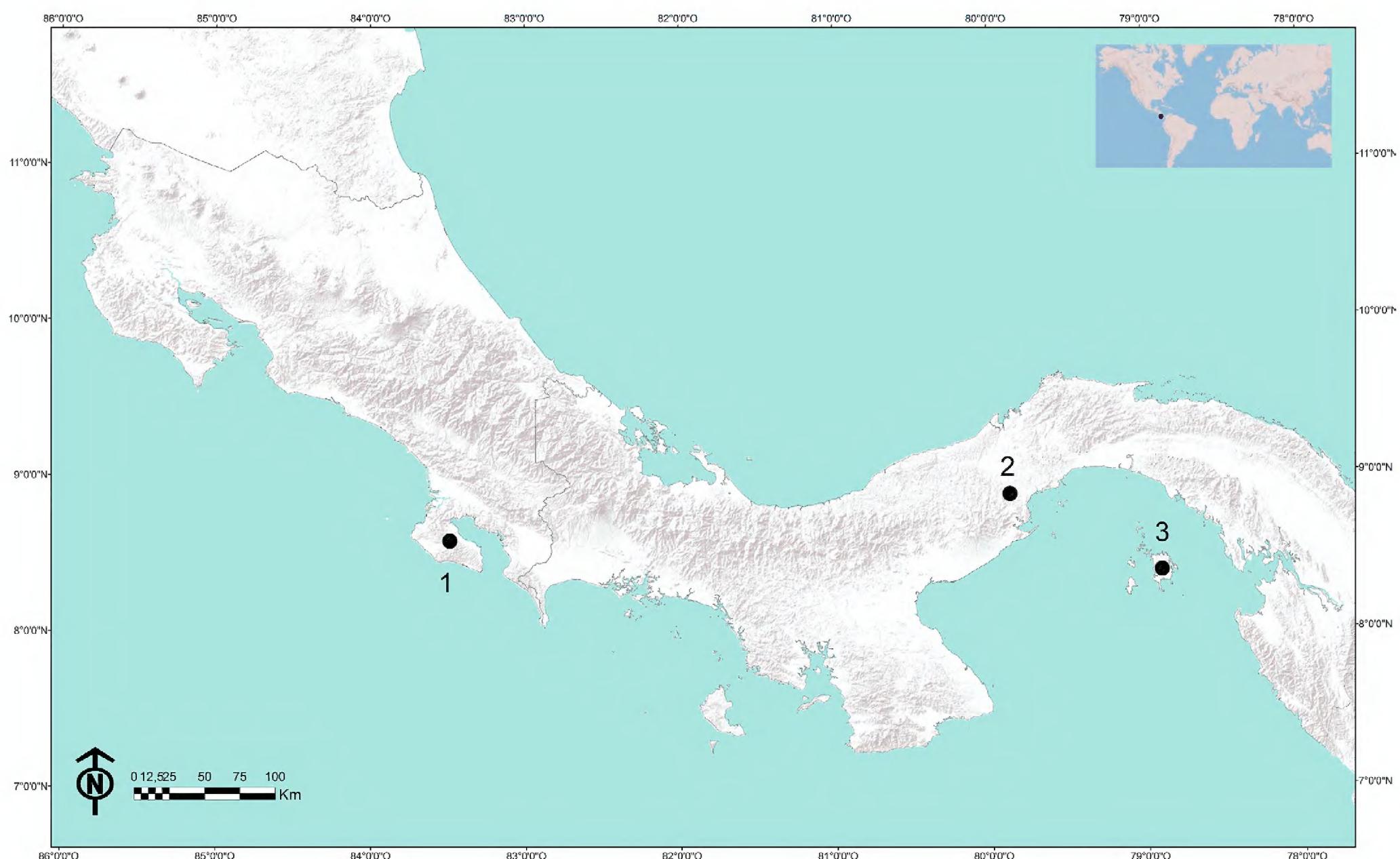
This new report represents an extension of the known geographic distribution of the Rufous Tree Rat, about 490 km from its type locality (Figure 5). This new record extends the northern distribution limit of this species and, based on the species list of Rodriguez-Herrera et al. (2014), increases the number of living mammals of Costa Rica to 250 species. As discussed by several authors (e.g., McLearn et al. 1994; Loeb et al. 1999), nocturnal and highly arboreal mammals, such as the



**Figures 2–4.** *Diplomys labilis* in La Tarde, La Palma de Osa, Costa Rica. **2:** Motionless in its burrow. **3:** Complete body. **4:** Head detail. Photos 2 and 4 by JDRF, and 3 by DSS.

Rufous Tree Rat, are often missed during biodiversity surveys due to their inaccessible habitat and a general absence of arboreal trapping.

As one would expect, and as stated by Rodríguez-Herrera et al. (2014), species from mammal orders with the highest number of living species (i.e., Rodentia and Chiroptera) are still being added to geographic surveys due in part to difficulties in sampling and taxonomic uncertainty. A future goal should be to obtain legal permits to handle and collect an individual of the Rufous Tree Rat to be stored in a museum collection as a Costa Rica voucher specimen.



**Figure 5.** Map showing some points of the known distribution of the Rufous Tree Rat *Diplomys labilis*, with black dots showing: 1, new record: La Tarde, La Palma de Osa, Puntarenas, Costa Rica (08°34'47" N, 083°29'21" W, datum WGS84; 150 m elevation); 2, Northern limit of its known distribution recorded by Reid (2009); 3, Type locality: San Miguel Island, Panamá (08°19'4" N, 078°56'05" W; 30 m elevation).

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